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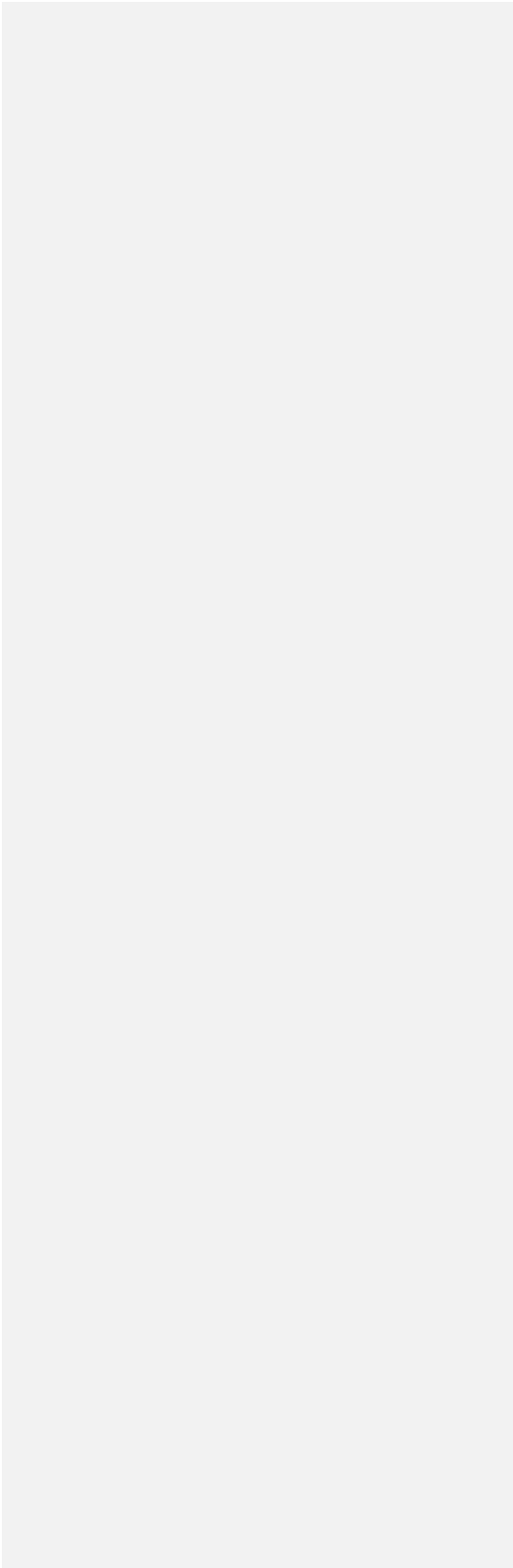
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7 Complexity, anthropology, and epidemics

Abstract: Epidemics are complicated. In twenty-first century disease control, this much, at least, is clear. The successful management of epidemics is only possible through an understanding of this complexity. Specialists refine ever more complex ‘Standard Operating Plans’, their expertise embedded in an understanding of the ways in which risk meets resilience, and a sensitivity towards the intersections between intimate interactions and institutional or governmental controls. Complexity is also an organising concept for contemporary anthropology. Post-modernist conceptualisations of complexity, multiplicity, and hybridity have been central to the anthropological project of the last 25 years. Dominant conceptualisations of modernity across the social sciences focus on the interplay and intersection of multiple scales, practices, and actors. The hegemonic viewpoint is that social practice and processes are embedded in and shaped by diverse connections that extend back into deep and shallow time, across proximate and distant space, and by the contingent meeting points between the familiar and the institutional, the political, economic, and the personal. Biomedical and anthropological understandings of complexity are similar. But they are not the same. Drawing upon long-term ethnographic fieldwork on two different epidemics (the HIV epidemic in East Africa and the Ebola epidemic in West Africa), this chapter explores what these two biomedical and anthropological ontologies of complexity have in common and the ways they are different. The chapter argues that an understanding of the points of friction between these understandings forms of complexity helps reveal the extent of the possibilities of an anthropological contribution to understanding — and helping in the management — of epidemics.



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Complexity, anthropology, and epidemics

Hannah Brown, Durham University,

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It is late in the evening. The tables around the poolside of an upmarket hotel in Bo, Sierra Leone's second city, host people of many different nationalities. The driveway is jam-packed with four-wheel drive vehicles parked tightly together, each marked with familiar branding; World Health Organisation; UK AID; US-AID; Red Cross; Centres for Disease Control. A North American man is joking about how important he finds the evening poolside meals ~~are~~ for understanding what is going on in other sectors of the response, as he catches up with staff from the World Health Organisation. There is an eerie intensity to this ~~strange~~ meeting of professional aid workers, medical staff, and emergency responders that is augmented by the incongruently pleasant surroundings. Outside the large metal gates of the hotel compound, we are hopeful that the Ebola epidemic has peaked, but there are still many new cases in the District each day. There are rumours that the government representatives who read out the daily updates on the radio ~~listing the numbers of deaths~~ are under-reporting the scale of the epidemic when they list the numbers of deaths, and the outbreak appears to be moving into previously unaffected areas of the country.

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~~As I look around me, I notice~~ It is noticeable that staff working who work in the Ebola holding centre at Bo Government Hospital have been absent all evening. My colleague explains that they are in a meeting, working on refining the Standard Operating Plan for the ~~holding~~ centre. Standard operating plans give health workers procedural

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rules for their work, for example, they describe when and how to use different items of Personal Protective Equipment (PPE) including gloves, masks, and bodybags; how often to check patients; and how long to stay inside the treatment area. It is after 10 pm.

Someone comments of the doctor in charge, ‘He is always like this, he works for hours every day and then spends the evenings working on improving procedures.’: Meanwhile, my dinner companion and I talk about a new mobile phone reporting system for infectious disease symptoms that he has been involved in developing, and the various new iterations it is going through.

Designs for different kinds of Ebola treatment facilities and other kinds of intervention were refined significantly during the 2014–16 West African epidemic. These design practices often took place through ongoing reflexive processes undertaken by people embedded within the organisational structures of the response (e.g. [Sanchez-Caren](#) 2015). Emerging designs for Ebola management were dependent not only on individual commitment and dedication, but ~~equally importantly~~ also on the many hours of time spent working in these settings, participating in the delivery of services, observing the work of others, producing and trying out new forms for organisation. ~~In this sense, t~~In this sense, the work that the staff from the Ebola holding centre were doing that night had much in common with the practices of ~~applied~~ ethnographic fieldwork.

* * *

Epidemics are complicated. Their successful management requires an understanding of this complexity. In twenty-first-century disease control, this much, at least, seems to be clear. Public health professionals develop strategies to ‘nudge’ people into adopting healthy or other desired behaviours within complex worlds ([Thaler and Sunstein 2008](#)). Disease control specialists like those in the opening vignette refine ever more complex ‘Standard Operating Plans’, their expertise embedded in a nuanced understanding of the relative likelihood that risk will unfold in a given situation, combined with optimism

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about the resilience of solid infrastructures characterised by careful, organised bureaucratic processes. Their models seek to predict who might come into contact with whom, and to intervene upon elaborate socio-technical-material networks that can produce conditions for the spread of pathogens (e.g. see Keck and Lachenal, this volume; Caduff 2015).

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Complexity is also an organising concept for contemporary anthropology. Post-modernist conceptualisations of complexity, multiplicity, and hybridity have become central to the anthropological project of the last 25 years and are a key conceptual artefact of anthropological thinking (e.g. see Tolia 2017). Understandings of the experience of modernity across the social sciences have become characterised by a dominant motif; the complex interplay and intersection of multiple scales, practices, and actors in the constitution of social worlds. Social practice, identities, and processes are seen as embedded in diverse connections that are shaped by human relationships within deep and shallow time, through proximate and distant space, and in-through the contingent meeting points between the relational, institutional, political economic, and the personal.

Biomedical and anthropological understandings of complexity are similar. But they are not the same. Drawing upon long-term ethnographic fieldwork in two epidemic contexts (the HIV epidemic in East Africa and the Ebola epidemic in West Africa), this chapter explores what ontologies of complexity in disease control and in anthropology have come to have in common, the ways they are different, and what might be revealed through a better understanding of by the dissonances between these different kinds of knowledge.

The general argument is as follows: Over the last twenty years a model of complexity that started out in philosophy and the social sciences (e.g. see Deleuze and Guattari 1987) has become hegemonic beyond social science disciplines, including in spheres of medicine and epidemic management (e.g. see Deleuze and Guattari 1987). In other words, disease control experts have started to think more like anthropologists. In

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particular, there is an increasing recognition among people engaged in epidemic control and in public health, of the complex networks in which people live, work, and act as social beings. This includes an increased sensitivity to the ways in which social actions are shaped by broader structural factors such as politics, economics, and history, as well as growing recognition that people do not inhabit singular identity categories, but move through the world within shifting, intersecting processes of social identity which in turn inform social practice.

Whilst models of complexity in social sciences and biomedicine have become more similar, there are important places where they differ. ~~In summary, One important difference is that~~ anthropologists generally seek to ~~capture~~ capture nuance and complexity, rendering ~~these~~ these visible ~~these dimensions of social life to those who read their work.~~ On the other hand, d Disease control ~~on the other hand,~~ often centres on activities that aim to simplify different forms of complexity. For example, in public health and disease control people often work to produce straight-forward guidelines that are assumed to help people navigate through complex worlds. Meanwhile, although the complex checklists and standard operating plans that now characterize many medical interventions may come closer to an anthropological way of seeing the world, there is still a difference between the way in which complexity is imagined in disease control settings and in anthropology. Standard operating plans and checklists developed for disease control tend to assume that all forms of risk and danger can be pre-emptively accounted for, and therefore see complexity is a problem to be dealt with primarily through documentation, organisation, and planning (cf. Scott 1998). Anthropologists also use careful, rigorous methods of documentation, and ~~they~~ try to reach conditions of data saturation through processes of comparison and triangulation gained through long-term immersion in the field. But at the same time, as a general rule, anthropologists implicitly work with a model of complexity that assumes ~~that there are dimensions of sociality there~~ are things that remain beyond what anthropologists can capture with ethnographic

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methods. ~~T~~There are dimensions of social life ~~which that~~ are so complex; they are more or less impossible to know. For many anthropologists, the value of ethnographic fieldwork is precisely that through returning our attention again and again, to the lived realities of people's lives, we can become attuned to those things that are at the edges of our understanding. In this way, ethnographic fieldwork allows us to gain a sense of those things that are ~~beyond and~~ at the edges of our comprehension. Ethnographic writing opens up attention to the complexities that take place beyond our descriptions of the concrete, and thereby troubles existing conceptualisations of the world around us (Carrithers 2014; [forthcoming](#)).

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This chapter argues that the dissonance and gaps between these ways of thinking about complex worlds ~~and how to understand them~~ suggest points at which disease control efforts and anthropology can come together in productive dialogue. ~~D~~These differences in conceptualisations of complexity mark one of the sites in which there is potential for anthropologists to contribute to epidemic response. In particular, ~~I argue that~~ anthropological attention to the ways ~~in which that~~ responses to epidemics unfold on the ground, and the way in which ethnography is attuned to unexpected dimensions of responses to epidemics constitute important sites at which anthropological work can contribute within outbreak response and public health interventions more widely.

HIV/AIDS, Kenya

March 2000. The large signboard outside Siaya Government Hospital had faded a little under the hot Kenyan sun, but the image of a nuclear family was still clear; ~~a man, woman and their three two children~~ pictured in the foreground. The message written in English at the bottom of the signboard read, 'Protect your family: Use a condom every time you have sex'.

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Figure 7.1 AIDS prevention advertisement by the NGO AIDS Consortium with PATH in Kenya. Colour lithograph, ca. 1997

Credit: Wellcome Collection

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It was five years before the first free HIV medication would be made available in Kenyan government health facilities and, despite the fact that thousands of people in the county were dying slow painful deaths from AIDS, the Kenyan government – like most other African nations at the time – focused its attention on preventing new infections. Since its foundation in the late 1980s, the Kenyan National AIDS Control Programme (NACP) had prioritised establishing a safe blood supply; developing a set of AIDS guidelines for health care professionals; and educating the Kenyan public on modes of transmission. The focus of these preventative strategies was on practises that were understood to put people at risk. Having multiple or extra-marital sexual partners was considered one such ‘risk practice’ and the signboard at Siaya District Hospital was directed at a form of masculine sexuality assumed to fall within this category of ‘risky behaviour’, one where men often took sexual partners outside of marriage. The message was clear enough, but in a community where the majority of marriages were polygynous and both men and women generally wanted to have children within these unions, it was hard to see how the advice to men to ‘use a condom every time you have sex’ mapped onto ~~this~~ the more complex social reality of people’s lives.

As elsewhere in Africa, explanations for HIV prevalence in Western Kenya during the early period of the epidemic leading up to the roll-out of mass treatment often isolated particular ‘sexual practices’ and ‘risk groups’ as areas of concern. During the 1980s and 1990s, the realisation that much greater numbers of African women were becoming infected with HIV than was the case in Western Europe and North America prompted a new tranche of studies on ‘African sexuality’ (e.g. [Caldwell et al. 1989](#)) ~~that~~ ~~were~~ founded on the belief that there must be something about African sexual behaviour

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that accounted for the epidemiological ~~difference that was~~ trends that were visible in sub-Saharan Africa. Some anthropologists described this as framing of the HIV epidemic that ~~made connections between the~~ as the ‘invention’ of ‘African AIDS’ ([Patton 1990](#)), and criticised ~~what they saw as the racist underpinnings of an assumed connection between~~ epidemiology of the epidemic in sub-Saharan Africa and notions of ‘African sexuality’ ~~these approaches~~.

The task of unpacking and critiquing ways in which the HIV/AIDS epidemic was being framed in public health and biomedical responses to the disease during the pre-treatment era became ~~an significant important~~ focus and important contribution of anthropological research in this period. Anthropologists were among the first to show ~~the ways that how~~ the harsh realities of everyday life in contexts of economic insecurity exposed people, especially women, to HIV (e.g. [Schoepf 1997](#)). For example, [Sandra Wallman’s \(1996\)](#) excellent study of women living in urban Uganda in the early 1990s showed how they endeavoured to secure their own wellbeing and that of their children against very difficult odds. Wallman showed how the economic constraints under which women lived exposed the mechanisms via which women became ~~made them~~ more vulnerable than men to contracting HIV/AIDS, ~~because of the economic constraints under which they lived,~~ even while women were also often blamed for spreading the disease. Similarly, in his influential study on HIV in Haiti, Paul Farmer ([1992](#)) ~~sought to explain~~ showed how ‘geographies of blame’ intersected with the lived experience of the epidemic, and ~~further~~ critiqued the dominant biomedical concept of risk by offering examples of people who ~~were becoming~~ became infected without necessarily engaging in ‘risky practices’ at all. For example, the chapter of his book that documents the life of a woman he calls Anita chronicles the experiences of multiple personal and economic misfortunes that lead her eventually to contract HIV from her single sexual partner. Farmer’s ethnography is sufficiently rich that we come to understand that there are many women in Haiti who are like Anita.

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Although not strictly speaking written by anthropologists, another contribution to these debates deserves mention here. In 1991 an important article by Randall Packard and Paul Epstein argued that epidemiological discourse about HIV/AIDS was founded on prejudiced ideas about African sexuality.

They wrote,

[I]t was argued as early as 1985 that the heterosexual transmission of HIV in Africa was the result of higher levels of sexual promiscuity among Africans, or in the current language of social science research on AIDS 'poly-partner sexual activities'. The middle class business-man or bureaucrat with a string of lovers, the truck drivers have sexual contacts all across the African map, and above all the pervasive female prostitute who was said to have literally hundreds of contacts each year, were identified as the main vectors of HIV transmission in Africa.

(1991)

Packard and Epstein argued that there were many reasons why the HIV/AIDS epidemic was following different patterns in sub-Saharan Africa to those seen in other parts of the world. The most significant being of these was the political-economic context in which the epidemic was unfolding, but also other factors such as the massive re-using of syringes and medical equipment in health facilities were also important. They argued that there was no scientific basis for focusing on sexual behaviour over and above other causes for the spread of the virus, and critiqued-criticised those social scientists who carried out behavioural research that fell within the paradigm of 'understanding risk practices' rather than exploring the broader question of the different kinds of social conditions that led to the spread of HIV/AIDS. Packard and Epstein argued that this closure of research questions was likely to limit our ability to understand and respond to the epidemic, and that because risk factors were seen as being culturally determined this meant that responders could then blame the spread of HIV/AIDS on the risky practices of

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those perceived to be spreading the virus, and could ignore significant structural and economic problems that created conditions of risk.

In all of these examples, and many others from this period, the role that anthropologists took on in the early part of the HIV/AIDS epidemic was largely to question the terms by which the epidemic was being framed, and push for a deeper and *more complex* understanding of the ways in which people lived, and particularly how forms of economic inequality shaped landscapes of risk. Many anthropologists at the time understood their work on HIV as situated within a critical project that aimed ‘to sort out how particular versions of truth are produced and sustained, and what cultural work they do in given contexts’ (Treichler 1989: 48). An emergent approach known as Critical Medical Anthropology became a central – some argue defining – orientation within the sub-discipline. Later in the epidemic, with the growing realisation that the risk of contracting HIV was much more widely and complexly distributed than the narrow categories of truck driver/prostitute/sugar daddy allowed for, and, for example, that one of the strongest markers of risk was being a married heterosexual woman, it was clear how right anthropologists had been to push for a more complex interpretation of risk in terms of the lived nature of the epidemic, and how dangerous the simplification of risk into risk groups had been in terms of public health messaging.

Ebola, Sierra Leone

September 2014. I received an invitation from an epidemiologist colleague to ~~join a collaboration~~ collaborate with a humanitarian non-governmental organisation working in West Africa. Together, we developed a research proposal that combined a short piece of fieldwork on infection prevention control in health facilities that would be followed up with the development of a health-worker-led intervention that would be implemented by the NGO (Ratnayake et al. 2016). Two months later, we were ready to start work. It

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was my first time to travel to an Ebola outbreak and the days before leaving I did what I could to mitigate the fear of travelling to the epicentre of the outbreak at a time when the international media was – literally – at fever pitch. I called a friend who had been working in Guinea and Liberia. She gave me some advice; don't touch anyone or anything; wear covered shoes, not sandals; think about having a bleach spray in your room, so that you can spray the bottoms of your shoes when you get home; have different clothes for 'inside' and 'outside'; don't sit down if you visit health centres or if you go to areas where there are active cases; think about taking your own chair – a plastic one – that you can take with you to the field and spray with bleach afterwards; wash your fruit in water mixed with bleach. Her practical advice reassured me, but I was still worried. My youngest son was six years old. Most nights, I woke to the thud of footsteps on the landing at home as he moved from his bedroom to mine, seeking companionship as he grew frightened by the dark loneliness of the night. Was it safe for me to sleep with and cuddle my child? I wrote to an epidemiologist colleague, who had worked in a number of filo-virus epidemics, for more advice: 'Yes of course it's safe to hug your child. Just stick to the 'no touch' policy when you are away, and avoid large gatherings when you get back, because you don't want to get sick with something and be wondering if it is Ebola'.

These quite detailed and list-like forms of practical wisdom were the first sign I encountered. example I experienced of the importance of what Paula Hawkes (2011) calls 'checklists' in the response against Ebola. The checklists I encountered during fieldwork in the period of the epidemic were complex lists and procedures that could be more or less formalised, and which helped people manage situations where they might be at risk. Gawande elaborates his 'checklist manifesto' in a popular book that not only valorises careful list-making, but which also captures the contemporary popularity of the motif of complexity and the ways ideas of complexity have moved beyond anthropology. Drawing on his expertise as a surgeon, Gawande's book considers what he argues is a central problem of modern medicine: the ways in which we have, on the one hand, an increase in

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medical specialisms and knowledge that has created ever more possibilities for saving lives. On the other hand, we know that mistakes are still made, and that sometimes, the proliferation of multiple technologies and possibilities for action can create further opportunity for error. Gawande's answer to 'The Problem of Extreme Complexity' (this is the title of the opening chapter of the book), is the humble checklist. Checklists are the solution to complex problems, Gawande argues, when they are used to ensure that 'simple steps are not missed or skipped and . . . to make sure that everyone talks through and resolves all the hard and unexpected problems' (2014: 70).

It was whilst doing fieldwork in the Peripheral Health Units of Eastern Sierra Leone, where government health workers were endeavouring to provide routine medical care to pregnant women and sick adults and children and to cope with a situation where people showing symptoms of Ebola might appear seeking care at any time, that I came across a powerful example of the checklist as Gawande imagined it. The seventeen-page document had been produced in September 2014 at the height of the epidemic in Sierra Leone. Entitled, 'Infection control and screening and isolation of suspected Ebola cases at the peripheral units', the document included general guidance for medical practice in the health facility, such as, 'Do not use mobile phones or touch personal items with gloved hands', and 'Minimize unnecessary touching of your face' (Kenema District Health Team et al. 2014: 4). The document went on to explain how to screen patients who arrived at the health facility in order to identify patients suspected of having Ebola before going on to describe how to set up an isolation area and manage suspect patients, and how to organise flows of patients and waste in the health facilities.

When reading the document, and discussing the processes involved with the NGO staff who were using it to train health workers, what was striking was the extraordinary attention to detail and spatial organisation that was included, covering the degree of distance that health workers should keep from patients and their co-workers (1 metre of 'social distance') and down to the position of chairs in the screening area, which should

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be turned at 90° from the health worker doing the screening, to avoid a situation where the patient vomited and droplets sprayed over the health worker sat opposite them.

Written by senior Sierra Leonean health workers who had been at the frontline during the early part of the epidemic in the country, in collaboration with staff from the World Health Organisation and other NGOs with long-term experience working in the country, the document seemed to be informed by an ethnographic sense of working conditions in the health facilities and the ways in which patients and their families might respond to the new forms of organisation of ways that care and treatment were being organized during the epidemic. In the context of a health system where there were widespread shortages of equipment and resources and families were accustomed to providing many items required for patient care from home, the following passage struck me as being particularly well-tuned to an ethnographic reality of providing care in these settings:

There should be no upholstered material in . . . [the isolation unit]
. . . (e.g., covered furniture, rugs, mattresses) as these are difficult to disinfect. If there is to be any area for patient sleeping, it must not have a mattress that could absorb infectious fluids. If the families want to provide bedding, this is acceptable however it must be disposed of (burned) after patient departure.

(2014: x)

This section of the document appeared to be underwritten by an awareness of the ways that people often make-do with available quipment (such as upholstered chairs) when they work in settings where basic supplies are not availbel, as well as a sensistivity towards the kinds of support that families might want to provide their loved ones as well as-and the value of the material objects that constituted this support. The implication in this passage, as I interpret it, is that family members should be told in advance that they

will not be able to keep any of material comforts that they provide once they leave the isolation unit in an effort to avoid further distress when valuable objects are destroyed.

Billboards

Of course, not all aspects of the Ebola response were characterised by such sensitivity to the complexities of the ways that people lived their lives, or such thoughtfulness about how people might respond to the management of the outbreak. The public health messages that were visible on billboards and the walls of public buildings, shops, and offices all over Sierra Leone during the epidemic aimed to do something different. These communications were also framed as practical guidance for staying safe during the outbreak, but were presented in much more simple terms, most commonly as lists of dos and don'ts to guide people through the challenge of living in the epidemic.

It is difficult to conceive of a public health emergency that is not accompanied by large-scale health promotion campaigns. The widespread visibility of posters, painted messages, and billboards with photographs of leading Sierra Leonean health workers depicted as heroes of the response, particularly in urban areas, did much to visibly increase the profile and sense of presence of the disease during the period of the epidemic. However, anthropologists reflecting on the impact of these messaging campaigns have revealed the ways that these simple guidelines often failed to provide the kinds of practical wisdom or information that people needed when faced, for example, with the challenge of caring for someone who was sick. For example, Sharon Abramovich ~~as writes~~ wrote the following about in relation to affected communities in urban Liberia,

‘Community leaders sought training to address the following key technical challenges in Ebola management:

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- How to properly care for sick people
- How to isolate sick people
- How to manage quarantines safely
- How to administer community-based holding centres
- How to transport sick people safely
- How to isolate corpses
- How to bury infected corpses when corpse removal teams did not come
- How to maintain personal and household hygiene and use hygiene materials
- How to make use of available PPE
- How to properly disinfect their homes.

Notably, they were not seeking the basic information about Ebola then offered during health communications campaigns (ex. “What is Ebola? Have you ever heard of Ebola?”) ([Abramowitz et al. 2015](#): 8).

Similarly, Paul [Richards \(2016\)](#) argues that at the beginning of the epidemic, too much emphasis was placed on public health messaging. Whilst it was important to provide people with information about Ebola, he argues that the information was sometimes incorrect, thereby undermining people’s confidence in health authorities and that responders didn’t pay enough attention to the kinds of responses that affected communities were developing to protect themselves, refusing to recognise the importance of what he termed ‘people’s epidemiology’. Like Abramowicz, Richards describes people demanding practical advice – for example, how to safely give water to a patient or care for a sick child whilst waiting for the ambulance to arrive.

Similarly, in work I have carried out with Jesse Bonwitt and others, we have shown how bans on hunting and eating ‘bushmeat’ were problematic both from a public

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health perspective (as there was probably only one case of animal to human transmission of the virus during the whole epidemic) and also because the ban didn't chime with people's own experiences of risk (Bonwill et al. 2018). Many people had eaten meat from wild animals for years without incident and found it hard to believe that bushmeat consumption was implicated in the spread of the epidemic. Meanwhile, this meat constituted an important – and cheap – source of protein in people's diets. The contradictions that existed between the messaging and people's own experiences of bushmeat consumption in communities that were also suffering economic and social hardship because of the epidemic caused the trade in wild meat to be pushed underground. This rendered the development of acceptable forms of disease surveillance in animal populations impossible, and created a sense of wider distrust in public health messages.

Anthropologists

While the public health advertising that appeared during the outbreak might have drawn upon familiar strategies of simplification, the epidemic response also enrolled anthropologists in ways not previously seen. Barrie and Bonnie Hewlett had laid the groundwork for anthropological involvement in Ebola response in their work in Uganda and the DRC (Hewlett and Hewlett 2008), but anthropologists played a role in the West Africa outbreak that was unprecedented. Three networks were developed 'to disseminate information, inform policy, and mobilize political activism around the epidemic response' (Abramowitz 2017), including the Ebola Response Anthropology Platform, whose members worked to provide social science resources to policy makers during the epidemic and produced extensive briefing materials and advice on how to develop locally appropriate interventions through the period of the response.

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It is pertinent to the argument of this chapter that anthropological knowledge was sought out, required, and valued to such a great extent at this time. For example, responders wanted to understand how people prepared bodies and buried their dead (e.g. Richards 2016), and searched for anthropologists who could provide this information. The increased reliance on anthropological approaches is evidenced by the resources provided to support anthropological networks, the embedding of anthropologists in certain aspects of the response such as the building of treatment centres, and the use of anthropologists to explore the reasons behind issues of ‘resistance’ or ‘reticence’ to public health messaging (e.g. Anoko 2014). Whilst the contribution of anthropologists was small in comparison to that of other fields of response, particularly in financial terms (Abramowitz 2017), the ‘concept of “anthropology” came to serve as a semantic marker of solidarity with local populations, respect for customary practices and local sociopolitical realities, and an avowed belief in the capacities of local populations to lead localized epidemic prevention and response efforts (Ibid: 421)’. As Abramovicz argues, the discipline of anthropology went from a position of being a relatively weak outsider in terms of developing the terms of the response to gaining recognition as offering important contributions to outbreak response.

The problem of extreme complexity

The role of anthropology in epidemic contexts has changed considerably since the early part of the HIV epidemic, and, as we have seen in the recent Ebola outbreak, continues to change and develop as anthropologists work more closely with allies in other fields and anthropological responses come to be considered more central components of epidemic control. The broad changes that I have mapped out from the 1990s to the present highlight a shift from a largely ‘critical’ role for anthropologists who sought to change the terms of the debate to a more collaborative, engaged role that often includes elements

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of critique but also works beyond this paradigm. This shift is mirrored elsewhere, beyond the discipline. For example, in inviting me to give a talk at the 2018 annual meeting for Anthropology in *MSF Medecins Sans Frontieres* (MSF), the organiser described to me the long struggle social scientists had to get make anthropological ways of thinking approaches part of the mainstream thinking of the organisation. Now that anthropologists are employed more often in MSF, both in field settings and at HQ, the terms of the debate have changed – and the focus has moved to a consideration of how best anthropologists can contribute, and to thinking about the merits of different modes of collaboration and engagement. In this chapter, I have argued that these shifts in the way that anthropology is being enrolled in epidemic responses is partly due to a change in ways of thinking about epidemics, and, in particular, because an understanding of complexity that started off in the social sciences and was popularised in anthropological reflections on the HIV epidemic is now increasingly shared by biomedical practitioners who recognise its value in outbreak response settings.

Returning to the development of Standard Operating Plans ~~and the use of personal protective equipment (PPE)~~ in health settings in epidemic contexts, I want to suggest that these interventions highlight ~~both a recognition of complexity in the frameworks of the biomedical response but also~~ reveal some places where biomedical understandings of complexity reaches ~~its~~ their limits. PPE Personal protective equipment such as gloves, gowns and goggles, works well at stopping the spread of infection because its proper use entails recognition of social multiplicity and complexity, and the many different ways in which human lives and material objects shape, affect, and interact with each other. PPE is what ~~anthropologists might~~ we might want to think of as a post-modern object, ~~consisting~~ embedded in ~~of~~ multiple relations and designed to be used in ways that are cognisant of the complex, networked social worlds in which people live. If we think about the quite different jobs that boots, gloves, goggles, face-shields, and other items of protective equipment are expected to do, or consider the complex rules for putting on and taking off

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protective materials, the use of PPE in hospital settings reveals a sensitivity to the very complex multivalent thinking relationships within which it is used. But PPE also works on the assumption that it is possible to tease apart people's entanglements with the world into a more straightforward network of relations and interactions. In a sense, the use of protective equipment in health settings is an attempt to render the postmodern modern, to return complex networks into more simple meetings and interactions in an effort to produce a world where some things can be separated from other things.

I argued in the opening of this chapter that anthropological fieldwork often tries to keep in mind the ways ~~in which forms of social~~ complexity ~~often can~~ unfold at the limits of what we think we know, and even of what it might be possible for us to know. Anthropology therefore reminds us that we can never take objects out of the social worlds in which they are used and that, in essence, whilst we can do our best to work in complex worlds, we can never fully simplify them. This means that, as in the case of the billboards described previously and the problems that were encountered in the delivery of simple health messages during the Ebola epidemic, we cannot assume that introducing new kinds of ~~PPE-protective equipment~~ into health settings is simply a question of giving people access to objects and knowledge about how to use them, or that we can map in advance all the ways in which such equipment will be used, or what they will signify to people who encounter them. We also need to explore and understand how these objects are used in the settings where they are introduced.

A case in point: During the epidemic in Sierra Leone, I visited a health setting that had received training in new infection prevention control measures two days previously. At the gate to the hospital, the staff had set up a screening table. All the items asked for in the protocol were present, including a hand-washing station nearby, a list of screening questions to ask patients who arrived at the station, an infra-red thermometer and a box of gloves. A nurse dressed in protective equipment sat at the screening station. However, a second woman ~~sat right~~ was sitting on the bench immediately next to the man doing the

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~~screening, the screening station~~ as it provided a convenient location to open and lower a rope that let vehicles into the health centre and the bench on which the screener was sitting offered a comfortable and shady place to sit. He was protected. ~~H,~~ but her lack of protection was striking. Meanwhile, only ~~those patients who were attending the clinic~~ who visibly appeared to be sick were screened; pregnant women walked straight through the screening station for antenatal appointments without having their temperature taken, as did other regular visitors such as a woman who arrived to sell biscuits and sweet soft drinks.

In a more recent example, during a visit to Sierra Leone in 2018, I carried out fieldwork in the maternity ward and the main ~~hospital triage~~ area of Kenema government hospital. The hospital had been very badly affected in the Ebola outbreak. ~~I with the~~ deaths of forty-two hospital staff during the Ebola outbreak were commemorated on a monument at the entrance to ~~the hospital compound~~. They had died, partly because of a lack of basic resources like gloves and bleach, especially in the early part of the epidemic. In 2018, the staff ~~I observed were again found themselves working forced to~~ work without sufficient protective equipment. ~~Here,~~ In this instance the guidelines available (including a copy of a 100 page ~~guidance~~ document available on the nurses' desk in the triage) lacked sufficient or relevant information. If there is no bleach, is it better to wash a stethoscope in 'plain water' (water containing neither soap nor bleach) or to wipe it with a tissue? If gloves are in short supply, is it safe to try and do examinations with one hand, and use only one glove each time, or better to send patients' families to buy gloves outside the hospital, even though this may delay their treatment? If there are no protective gowns available, is it reasonable to ask a patient's family members (who have already been in close contact with the sick person) to carry their patient to a hospital bed for admission? These are the kinds of challenges that the health workers I was observing were dealing with as they carried out their work. Standard Operating Plans for using protective equipment in resource-limited settings need to include suggestions for

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safe ways of working when these objects are in short supply. And whilst a good SOP-plan should be able to pre-empt locally specific challenges that may arise – such as the distress of family members who have to observe the burning of property that belonged to a sick person – anthropology teaches us that we always need to keep in mind the unexpected and complex dimensions of social worlds-life that lie at the limits of our conceptualisations of the world and which are revealed in the lived realities of social practice.

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